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10/680,072	10/06/2003	Sridhar Srinivasan	3382-66954	9945

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EXAMINER	
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	**Application No.** 10/680,072	**Applicant(s)** SRINIVASAN ET AL.	
	Examiner Chikaodili E. Anyikire	**Art Unit** 2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date [illegible].

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. The application is responsive to application number (10/680,072) filed on September 07, 2003. Claims 1-44 are pending and have been examined.

Preliminary Amendment

2. Acknowledgement of the applicant's preliminary amendment for Application No. (10/680,072), filed on 03/11/2004.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1, 5-6, 8-12, 13-19, and 21-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Sun et al (US 2003/0053541).

As per claim 1, Sun et al disclose a computer system, a computer-implemented method ([0040], Ln 1-5) comprising:

receiving video data (Fig 5, 62);

encoding the video data(Fig 5, Encoding section); and

outputting the encoded video data ([0026], Ln 14-16) as well as control information for controlling post-processing filtering (Fig 4, 55, [0024], Ln 1-8; the output of the coding parameters unit provides the control information for post-processing) of the video data after decoding ([0028]).

As per claim 5, Sun et al disclose wherein a video encoder (encoding section) specifies the control information depending on one or more criteria, and wherein the one or more criteria include quantization step size and/or quality of the video data ([0040], Ln 4-8).

As per claim 6, Sun et al disclose wherein the post-processing filtering (Fig 5, 94) includes applying a de-blocking filter (Fig 4, 56).

As per claim 8, Sun et al disclose wherein the control information comprises a level for the post-processing filtering ([0017], Ln 1-6; the prior art uses skip mode filtering as a level system for post-processing filtering).

As per claim 9, Sun et al disclose wherein the control information comprises a maximum allowed level for the post-processing filtering ([0017], Ln 1-6; the prior art uses skip mode filtering as a level system for post-processing filtering where the maximum would be filtering).

As per claim 10, Sun et al disclose wherein the control information comprises a minimum allowed level for the post-processing filtering ([0017], Ln 1-6; the prior art uses skip mode filtering as a level system for post-processing filtering where the option of not filtering at all would be the minimum level).

As per claim 11, Sun et al disclose wherein the control information comprises a filter type selection for the post-processing filtering ([0017], Ln 1-6; the prior art uses skip mode filtering as a selection means for whether there should be a de-blocking filter operations should be done or none at all).

As per claim 12, Sun et al disclose further comprising entropy encoding the control information (Fig 5, 70).

As per claim 13, Sun et al disclose wherein the control information is specified on a sequence-by-sequence basis (Fig 5, 62).

As per claim 14, Sun et al disclose wherein the control information is specified on scene-by-scene basis (62).

As per claim 15, Sun et al wherein the control information is specified on a frame-by-frame basis (62).

As per claim 16, Sun et al wherein the control information is specified on a region-by-region basis (62).

As per claim 17, Sun et al disclose a computer-readable medium storing computer-executable instructions for causing the computer system to perform the method of claim 1 ([0041], Ln 1-4).

As per claim 18, Sun et al disclose a computer-implemented method comprising:

receiving encoded video data in a bitstream ([0026], Ln 14-16) as well as control information in the bitstream for controlling post-processing filtering ([0028]);

decoding the encoded video data (Fig 5, decoding section); and

performing the post-processing filtering (Fig 5, 94) on the decoded video data based at least in part upon the received control information ([0028]).

As per claim 19, Sun et al disclose wherein the post-processing filtering (94) includes applying a de-blocking filter (56).

As per claim 21, Sun et al disclose wherein the control information comprises a level for the post-processing filtering ([0017], Ln 1-6; the prior art uses skip mode filtering as a level system for post-processing filtering).

As per claim 22, Sun et al disclose wherein the control information comprises a maximum allowed level for the post-processing filtering ([0017], Ln 1-6; the prior art uses skip mode filtering as a level system for post-processing filtering where the maximum would be filtering).

As per claim 23, Sun et al disclose wherein the control information comprises a minimum allowed level for the post-processing filtering ([0017], Ln 1-6; the prior art uses skip mode filtering as a level system for post-processing filtering where the option of not filtering at all would be the minimum level).

As per claim 24, Sun et al disclose wherein the control information comprises a filter type selection for the post-processing filtering ([0017], Ln 1-6; the prior art uses skip mode filtering as a selection means for whether there should be a de-blocking filter operations should be done or none at all).

As per claim 25, Sun et al disclose further comprising entropy decoding the control information (Fig 5, 82).

As per claim 26, Sun et al disclose wherein the control information is specified on a sequence-by-sequence basis (62).

As per claim 27, Sun et al disclose wherein the control information is specified on a scene-by-scene basis (62).

As per claim 28, Sun et al disclose wherein the control information is specified on a frame-by-frame basis (62).

As per claim 29, Sun et al disclose wherein the control information is specified on a region-by-region basis (62).

As per claim 30, Sun et al disclose a computer-readable medium storing computer-executable instructions for causing a computer system to perform the method of claim 18 ([0041], Ln 1-4).

As per claim 31, Sun et al disclose computer-readable medium storing computer-executable instructions for causing a computer system ([0041], Ln 1-4) to perform a method comprising:

receiving video data (62);

encoding the video data (encoding section); and

outputting the encoded video data ([0026], Ln 14-16) as well as control information (Fig 4, 55, [0024], Ln 1-8; the output of the coding parameters unit provides the control information for post-processing) for controlling de-blocking filtering (56), wherein the control information allows changes to the de-blocking filtering (56) on a region-by-region basis within a picture (62, [0017], Ln 1-6).

As per claim 32, Sun et al disclose a computer-readable medium of claim 31 wherein the de-blocking filtering (56) is in-loop filtering during decoding (Fig 5, 90).

As per claim 33, Sun et al disclose a computer-readable medium storing computer-executable instructions for causing a computer system ([0041], Ln 1-4) to perform a method comprising:

receiving encoded video data ([0026], Ln 14-16) as well as control information (Fig 4, 55, [0024], Ln 1-8; the output of the coding parameters unit provides the control information) for controlling de-blocking filtering ([0028]);

decoding the encoded video data (decoding section); and

performing the de-blocking filtering (56) based at least in part upon the control information ([0028]),

wherein the control information allows changes to the de-blocking filtering (56) on a region-by-region basis within a picture (62).

As per claim 34, Sun et al disclose wherein the de-blocking filtering is in-loop filtering (Fig 5, 90) during decoding.

As per claim 35, Sun et al disclose a computer-readable medium storing computer-executable instructions for causing a computer system ([0041], Ln 1-4) to perform a method comprising:

receiving video data (62);

encoding the video data (encoding section); and outputting the encoded video data ([0026], Ln 14-16) as well as control information for controlling in-loop filtering (90), wherein the control information includes a filter type selection for selecting ([0020], Ln 1-3) from among plural available filter types for the in-loop filtering (90, [0039], Ln 1-4).

As per claim 36, Sun et al disclose a computer-readable medium of claim 35 wherein the control information allows changes to the in-loop filtering (90) on a region-by-region basis within a picture (62, [0017], Ln 1-6).

As per claim 37, Sun et al disclose a computer-readable medium storing computer-executable instructions for causing a computer system ([0041], Ln 1-4) to perform a method comprising:

receiving encoded video data ([0026], Ln 14-16) as well as control information for controlling in-loop filtering ([0028]);

decoding the encoded video data (decoding section); and

performing the in-loop filtering (90) based at least in part upon the control information, wherein the control information includes a filter type selection for selecting from among plural available filter types for the in-loop filtering (90, [0039], Ln 1-4).

As per claim 38, Sun et al disclose a computer-readable medium of claim 37 wherein the control information allows changes to the in-loop filtering (90) on a region-by-region basis within a picture (62, [0017], Ln 1-6).

As per claim 39, Sun et al disclose wherein the controlling post-processing filtering (94) comprises skipping the post-processing filtering (94) for at least some of the video data (62, [0017], Ln 1-6).

As per claim 40, Sun et al disclose wherein the control information specifies that a video decoder (decoding section) should skip the post-processing filtering (94, [0017], Ln 1-6).

As per claim 41, Sun et al disclose a computer-implemented method comprising:

receiving encoded video data in a bitstream ([0026], Ln 14-16) as well as control information in the bitstream for controlling post-processing filtering ([0028]);

processing the control information, including identifying one or more syntax elements for the control information ([0033], Ln 1-6); and

decoding the encoded video data (decoding section).

As per claim 42, Sun et al disclose further comprising:

selectively performing the post-processing filtering (94) on the decoded video data based at least in part upon the control information ([0020], Ln 1-3).

As per claim 43, Sun et al disclose wherein the selectively performing comprises skipping the post-processing filtering (94, [0020], Ln 1-3) for at least some of the decoded video data.

As per claim 44, Sun et al disclose wherein the one or more syntax elements signal post-processing filtering strength ([0033], Ln 1-6).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 2-4, 7, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun et al (US 2003/0053541) in view of Kim et al (US 2003/0053711).

As per claim 2, Sun et al disclose a computer system, a computer-implemented method.

However, Sun et al does not explicitly teach human operator specifies the control information.

In the same field of endeavor, Kim teaches improved algorithm for smoothing discontinuities between image blocks (blocking artifacts) and reducing ringing noise, without introducing undesired blur. A typical system used to run the de-blocking and de-ringing algorithm of the present invention. A number of controllers and peripheral devices are also provided, as shown in Fig. 7. Input controller (Fig 7, 73) represents an interface to one or more input devices (Fig 7, 74; these are constituents that a human operator would used to specify control information).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to integrate the de-ringing of Kim to the post-processing filtering (94) of Sun et al. because it would provide an algorithm, which reduces the ringing artifacts in low bit-rate block-based coding ([0031], Ln 1-4).

As per claim 3, Sun et al disclose a computer system, a computer-implemented method.

However, Sun et al does not explicitly teach wherein the operator specifies the control information directly to a video encoder

In the same field of endeavor, Kim teaches improved algorithm for smoothing discontinuities between image blocks (blocking artifacts) and reducing ringing noise, without introducing undesired blur. A typical system used to run the de-blocking and de-ringing algorithm of the present invention. A number of controllers and peripheral devices are also provided, as shown in Fig. 7. Input controller (Fig 7, 73) represents an interface to one or more input devices (Fig 7, 74; these are constituents that a human operator would used to specify control information).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to integrate the de-ringing of Kim to the post-processing filtering (94) of Sun et al. because it would provide an algorithm, which reduces the ringing artifacts in low bit-rate block-based coding ([0031], Ln 1-4).

As per claim 4, Sun et al disclose a computer system, a computer-implemented method.

However, Sun et al does not explicitly teach wherein the operator specifies the control information to an application that provides the control information to a video encoder.

In the same field of endeavor, Kim teaches improved algorithm for smoothing discontinuities between image blocks (blocking artifacts) and reducing ringing noise, without introducing undesired blur. A typical system used to run the de-blocking and de-ringing algorithm of the present invention. A number of controllers and peripheral devices are also provided, as shown in Fig. 7. Input controller (Fig 7, 73) represents an interface to one or more input devices (Fig 7, 74; these are constituents that a human operator would used to specify control information). A storage controller (Fig 7, 77) interfaces with one or more storage devices (Fig 7, 78) each of which includes a storage medium that may be used to record programs of instructions for operating systems, utilities and applications which may include embodiments of programs that implement various aspects of the present invention ([0075], Ln 11-13).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to integrate the de-ringing of Kim to the post-processing filtering (94) of Sun et al. because it would provide an algorithm, which reduces the ringing artifacts in low bit-rate block-based coding ([0031], Ln 1-4).

As per claim 7, Sun et al disclose wherein the post-processing filtering (94).

However, Sun et al does not explicitly teach includes applying a de-ringing filter.

In the same field of endeavor, Kim teaches improved algorithm for smoothing discontinuities between image blocks (blocking artifacts) and reducing ringing noise, without introducing undesired blur. In block-based coding, monotone areas of the original image, where the pixel intensity changes gradually, suffer most noticeably from the abrupt changes across the block boundary, leading to blocking artifacts. When the

DCT coefficient quantization step size is above the threshold for visibility, discontinuities in grayscale values by removal of AC coefficients due to quantization and become clearly visible at the boundaries between blocks. Techniques are provided to reduce blocking and ringing artifacts in low bit-rate block-based coding, and are particularly applicable to such video coding ([0031], Ln 1-4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to integrate the de-ringing of Kim to the post-processing filtering (94) of Sun et al. because it would provide an algorithm, which reduces the ringing artifacts in low bit-rate block-based coding ([0031], Ln 1-4).

As per claim 20, Sun et al disclose wherein the post-processing filtering (94).

However, Sun et al does not explicitly teach includes applying a de-ringing filter.

In the same field of endeavor, Kim teaches improved algorithm for smoothing discontinuities between image blocks (blocking artifacts) and reducing ringing noise, without introducing undesired blur. In block-based coding, monotone areas of the original image, where the pixel intensity changes gradually, suffer most noticeably from the abrupt changes across the block boundary, leading to blocking artifacts. When the DCT coefficient quantization step size is above the threshold for visibility, discontinuities in grayscale values by removal of AC coefficients due to quantization and become clearly visible at the boundaries between blocks. Techniques are provided to reduce blocking and ringing artifacts in low bit-rate block-based coding, and are particularly applicable to such video coding ([0031], Ln 1-4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to integrate the de-ringing of Kim to the post-processing filtering (94) of Sun et al. because it would provide an algorithm, which reduces the ringing artifacts in low bit-rate block-based coding ([0031], Ln 1-4).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chikaodili E. Anyikire whose telephone number is (571) 270 -1445. The examiner can normally be reached on Monday to Friday, 7:30 am to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 270 - 1455. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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